



ATLANTIC TESTING LABORATORIES, Limited

P.O. Box 29
Canton-Potsdam Road
Canton, NY 13617
Phone: (315) 386-4578
Fax: (315) 386-1012

P.O. Box 91
23685 Cemetery Road
Felts Mills, NY 13638
Phone: (315) 773-5390
Fax: (315) 773-0334

5366 East Seymour Street
Cicero, NY 13039
Phone: (315) 699-5281
Fax: (315) 6993374

December 28, 1993

U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

Attn: Mr. Steve Dunbar

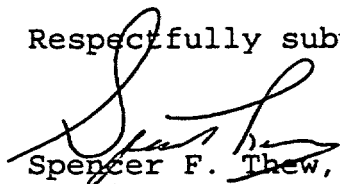
Re: Test Pits
Impervious Blanket, Dike H-3
Hopkinton Dam
Hopkinton, NH
Contract No. DACW33-93-D-0004
Delivery Order No. 0008
ATL Report No. CD0045-1-12-93

Ladies/Gentlemen:

In accordance with Delivery Order No. 0008, dated December 3, 1993, enclosed are two copies of our draft report for the test pits performed at the Impervious Blanket, Dike H-3, Hopkinton Dam, Hopkinton, NH.

If you have any questions or comments, please do not hesitate to contact our office.

Respectfully submitted,


Spencer F. Thew, P.E./L.S.
President

SFT/jlm

Enclosure

SECTION 1

TEST PITS

IMPERVIOUS BLANKET

DIKE H-3

HOPKINTON DAM

HOPKINTON, N.H.

Contract No. DACW33-93-D-0004

Contracting/Ordering Officer:

Charles W. Coe

Delivery Order No. 0008

PREPARED FOR: U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

PREPARED BY: Atlantic Testing Laboratories, Limited
P.O. Box 29
Canton, NY 13617

ATL REPORT NO. CD0045-1-12-93

DECEMBER 28, 1993

SECTION 2

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SECTION 3

SCOPE OF INVESTIGATION

A. DELIVERY ORDER NO. 0008

ORDER FOR SUPPLIES OR SERVICES						Form Approved OMB No. 0704-0187 Expires Aug 31, 1992		PAGE 1 OF 2			
(Contractor must submit four copies of invoice)											
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0187), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send your completed form to the procurement official identified in item 5.											
1. CONTRACT/PURCH ORDER NO. DACW33-93-D-0004		2. DELIVERY ORDER NO. 0008		3. DATE OF ORDER 12/3/93		4. REQUISITION/PURCH REQUEST NO. 961316-3327-3605		5. PRIORITY			
6. ISSUED BY Dept. of the Army M. E. Division, Corps of Engrs 424 Trapelo Road Walham, MA 02254-9149 Dorothy Meebius		CODE P61316		7. ADMINISTERED BY CODE EMPTY		8. DELIVERY FOB [] DEST [X] OTHER (See Schedule)					
9. CONTRACTOR Vendor Id: 00001526		CODE 80K19		FACILITY CODE		10. DELIVER TO FOB POINT BY 12/17/93		11. MARK IF BUS. IS [X] SMALL [] SMALL DIS-ADVANTAGED [] WOMEN-OWNED			
NAME AND ADDRESS ATLANTIC TESTING LAB, LIMITED P. O. BOX 29 CANTON, NY 13617						12. DISCOUNT TERMS 0 % 0 Net 0					
						13. MAIL INVOICES TO See Block 15					
14. SHIP TO Geotechnical Engineering Division, Engineering Directorate, at issuing office DACW3393D0004/0008		CODE GEB		15. PAYMENT WILL BE MADE BY Finance & Accounting Officer U.S.A. Engr. Div., New England 424 Trapelo Road Walham, MA 02254-9149		CODE FAO		MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER			
16. DELIVERY		This delivery order is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.									
PURCHASE		Reference your _____ furnish the following on terms specified herein.									
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.											
NAME OF CONTRACTOR		SIGNATURE		TYPED NAME AND TITLE		DATE SIGNED					
<input type="checkbox"/> If this box is marked, supplier must sign acceptance and return the following number of copies:											
17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE 95X3123 C01133415200000 MC #4,694.50											
18. ITEM NO.		19. SCHEDULE OF SUPPLIES/SERVICE		20. QUANTITY ORDERED/ACCEPTED*		21. UNIT		22. UNIT PRICE		23. AMOUNT	
0003		FURNISH NECESSARY SUPPLIES AND SERVICES TO DETERMINE BLANKET THICKNESS AND PERMEABILITY AT EACH TEST PIT LOCATION IN ACCORDANCE WITH THE ATTACHED SCOPE OF WORK AND DRAWINGS. GEOTECHNICAL INSPECTOR		24		HR		49.000000		1152.00	
*If quantity accepted by the Government is same as quantity ordered, indicate by x. If different, enter actual quantity accepted below quantity ordered and encircle.		24. UNITED STATES OF AMERICA				25. TOTAL		4694.50			
		BY: <i>Charles W. Coe</i> CHARLES W. COE m01 CONTRACTING/ORDERING OFFICER				29. DIFFERENCES					
26. QUANTITY IN COLUMN 20 HAS BEEN [] INSPECTED [] RECEIVED [] ACCEPTED AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED				27. SHIP. NO.		28. D.O. VOUCHER NO.		30. INITIALS			
DATE _____ SIGNATURE OF AUTHORIZED GOVERNMENT REP. _____				[] PARTIAL [] FINAL		32. PAID BY		33. AMT VERIFIED CORRECT FOR			
36. I certify this account is correct and proper for payment				31. PAYMENT [] COMPLETE [] PARTIAL [] FINAL				34. CHECK NUMBER			
DATE _____ SIGNATURE AND TITLE OF CERTIFYING OFFICER _____								35. BILL OF LADING NO.			
37. REC'D AT		38. RECEIVED BY		39. DATE REC'D		40. TOTAL CONT.		41. S/R ACCOUNT NUMBER		42. S/R VOUCHER NO.	

DACW33-93-D-0004

2 of 2

0008

ATLANTIC TESTING LAB, LIMITED

ITEM NO.	SCHEDULE OF SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT-PRICE	AMOUNT
0003 (continued)					
0005	PER DIEM - OVERNIGHT STAY	2	DA	55.000000	110.00
0006	MILEAGE FROM WALTHAM, MA AND RETURN	165	MI	0.500000	82.50
000708	50% OF \$1,152.00 (LINE ITEM NO. 3), DELIVERY ORDER NO. 0002	1	JB	576.000000	576.00
0015	SAMPLE DELIVERY	1	JB	110.000000	110.00
0026	BACKHOE EXCAVATOR BACKHOE EXCAVATOR WITH OPERATOR, 12 FOOT MINIMUM DIGGING DEPTH	24	HR	66.000000	1584.00
0077	SAMPLING BY HAND GRAB SAMPLING FROM OPEN FACE (20 LB BAG)	18	EA	60.000000	1080.00

Attachment NO. 1

GED REQUISITION NO. 93-52

SCOPE OF WORK

PROJECT: Test Pits

SITE: Impervious Blanket, Dike H-3, Hopkinton Dam, Hopkinton, NH

PURPOSE: To determine blanket thickness and permeability at each test pit location

1. SCOPE OF EXPLORATIONS.

A. A total of 9 test pits shall be excavated at the locations shown on attachments 3,4 & 5. The test pit locations will be marked in the field by the Government.

B. Each test pit shall be approximately 6 feet deep with side slopes of 1 vertical on 1 horizontal. The base area of each test pit shall be sufficient to provide enough room for a geotechnical inspector to obtain samples at any point along the 6-foot depth.

C. The Contractor shall provide a geotechnical inspector and all materials required for logging the test pits and obtaining soil samples. Soil samples shall have a minimum weight of 15 pounds and shall be stored in sample bags as described in paragraph 5c under the Technical Provisions section of the contract. For each test pit, one sample shall be obtained for each strata encountered.

D. The test pits shall be backfilled with excavated materials. The backfill material shall be placed in one foot layers and the entire layer shall be compacted with the maximum pressure available from the bucket of the backhoe.

E. The Contractor shall submit a report to the Government which meets the requirements and contains all pertinent information as described in paragraph 2.1 of the Technical Provisions section of the contract.

2. SITE CONDITIONS.

The proposed test pits are located along the 3500-foot long impervious blanket on the upstream side of Dike H-3. Light to heavy brush covers approximately 70 percent of the blanket along with scattered patches of small trees (see attachments 2 through 5). One test pit is located in "mature forest", with trees larger than 5-inches in diameter but not greater than 12 inches in diameter. Soils encountered in the area include clayey till, loose sands, and spoil/rock fill (near test pit no. 2). The blanket is accessible from both ends of the dike and there is a

clear path along the toe of the dike.

3. RIGHTS OF ENTRY.

Rights-of-entry will not be required.

4. COORDINATION.

The Government points of contact for field work are Yuri Yatsevitch at (617)647-8387 and Dave Shepardson at (603)746-3601. The Government points of contact shall be notified one week prior to the start of work so that the Government representative can be on site during the field work.

SECTION 3

B. PROJECT SITE

The project site is located on the upstream (south) side of Dike H-3 of the Hopkinton-Everett Lake Flood Control project, Hopkinton, N.H.

C. PURPOSE

The purpose of the investigation was to determine the impermeable blanket fill thickness at each test pit location and to obtain soil samples of each strata for laboratory testing.

D. SCOPE OF WORK

Inspection and exploration instructions were provided by the Army Corps of Engineers (NED), in Delivery Order No. 0008 and are included in Section 3a. of this report. General inspection and exploration instructions were provided by the Army Corps of Engineers (NED) through the contracted Specifications for Services, and Equipment Necessary for Conducting Geotechnical Exploratory Work Various Locations in New England.

Test pit excavations were performed by an excavation contractor, sub-contracted by Atlantic Testing Laboratories, Limited (ATL). The test pits were excavated to depths of roughly 6 ft using a rubber-tired Case 580E backhoe. Soil samples were obtained using a hand shovel and placed in 16 in. x 32 in. minimum size cloth sample bags.

The proposed scope of work required the excavation of nine test pits, located throughout the Impermeable Blanket Fill Area, upstream or south of Dike H-3. The test pits were excavated on December 16, 1993.

USACE Surveyors provided locations and elevations for the test pits.

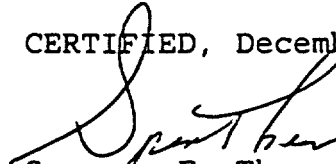
SECTION 4 QUALITY CONTROL

SECTION 4

A. GENERAL CERTIFICATION STATEMENT

I hereby certify that the records, equipment, and procedures mentioned herein were used to perform the subsurface exploration. I also certify that the work was performed in a professional manner and meets the requirements set forth in the Delivery Order. This report has been subject to my review and is both complete and technically accurate.

CERTIFIED, December 28, 1993



Spencer F. Thew, P.E./L.S.

B. GENERAL STATEMENT

The equipment and procedures used to perform the subsurface investigation are summarized below.

C. RECORDS TAKEN

The "Site Location Plan" and "Test Pit Location Plan" are included in Section 8.

Pertinent soil classification data and other information was noted on the following forms provided by the Corps of Engineers:

NED 198 Daily Log of Field Explorations

NED 119 Field Log of Foundation and Borrow Investigation

A series of logs for each of the test pits are included in Section 8.

A summary of Daily Activities and a Telephone Log are in Table I and Table II of Section 5, respectively. A Chain of Custody Log is in Section 6, a Safety Meeting Report is in Section 7.

D. EQUIPMENT USED

Excavation equipment included a rubber-tired Case 580E backhoe, subcontracted by Atlantic Testing Laboratories, Limited (ATL).

1. Various hand tools (i.e., shovel, tape measure).
2. Excavation Equipment (subcontracted)
 - Case 580E Backhoe

E. PROCEDURES

1. General Statement

A test pit subsurface investigation was performed throughout the impervious blanket fill area located south of Dike H-3, Hopkinton-Everett Lake Flood Control Project, Hopkinton, N.H., on December 16, 1993.

2. Surveying Procedures

Test pit locations will be located by the Army Corps of Engineers Surveyors.

3. Test Pit Location Procedures

Test pits were located using control established along the top of the dike by USACE Surveyors. Wooden stakes, painted orange and flagged, were driven in the ground at the test pit locations. A subsequent survey noting exact test pit locations, and elevations is to be performed by USACE Surveyors at some future date.

4. Sampling and Excavation Procedures

The field exploration included excavations and soil sampling. The test pits were excavated to approximate 6 ft depths using the Case 580E rubber-tired backhoe. Each soil strata encountered was sampled using a hand shovel, 15 to 25 lbs of representative material was placed into 16 in. x 32 in. minimum size cloth sample bags. The bags were identified using USACE tags.

A Chain of Custody Log was maintained to document custody of samples between ATL and the USACE.

SECTION 5

SUMMARY OF DAILY ACTIVITIES

AND

TELEPHONE LOG

SECTION 5A. SUMMARY OF DAILY ACTIVITIES

TABLE I

Thursday,
December 16, 1993
7:00 a.m. - 4:00 p.m.

- Geotechnical Inspector, Backhoe Operator on-site.
- Steve Dunbar, USACE Representative arrived on-site.
- Dave Shepardson, USACE Project Manager - Hopkinton Dam, arrived on-site to cut the lock on the access road gate with bolt cutters. It was replaced with new lock and key.
- Case 580E backhoe moved to upstream (south) side of Dike H-3 in to area of impervious blanket fill material, as shown on project plans.
- Backhoe began excavating test pits, in designated order, one through nine.
- Test pits 1 thru 4 excavated to 6 ft depth - strata changes recorded, representative samples obtained.
- Wally Shedd (ATL-Manchester) arrived on site delivering additional soil sample bags.
- Wally Shedd (ATL) and Steve Dunbar (USACE) left site at 11:00 a.m.
- Test Pit TP-5 excavated to 6 ft depth - strata changes recorded, representative samples obtained.
- Safety session conducted by Tom Eldridge, geotechnical inspector.
- Test Pits 6 thru 9 excavated to 6 ft depth - strata changes recorded, representative samples obtained.
- Orange painted survey stakes for test pit locations were checked and marked with black marker.
- End working day.

Friday,
December 17, 1993

- Delivered samples to NECED, Waltham, MA.

SECTION 5B. TELEPHONE LOG

TABLE II

HOPKINTON DAM - CD0045

December 3, 1993
9:45 a.m.

Steve Dunbar, USACE to Spencer Thew, ATL.
Steve called to discuss the requirement for 9 test pits, 6 ft deep, in the clay blanket at the toe of the dam. He indicated that he wanted a geotechnical inspector and it would require about 2 samples per test pit. Steve will fax the proposed scope of services.

December 9, 1993
1:30 p.m.

Steve Dunbar, USACE to Spencer Thew, ATL.
Steve wanted to verify Delivery Order No. 0008 was acceptable. Spence said it was acceptable. Steve requested project be scheduled for Tuesday, 12/14/93 or Thursday, 12/16/93. Spence indicated Tom Eldridge will schedule and call Steve back.

December 13, 1993
7:30 a.m.

Scott Coen, Coen Construction to Tom Eldridge, ATL. Scott told Tom that he was available to dig the test pits on Thursday and Friday of this week. Tom told him that we would meet on site at the USACE gate in front of the access road to Dike H-3 at 7:00 a.m. Thursday morning.

December 14, 1993
8:15 a.m.

Tom Eldridge, ATL to Steve Dunbar USACE.
Tom informed Steve that we were ready to begin work at Dike H-3, excavating test pits on Thursday, December 16. Steve said that he was going to the project site today, Tuesday, to locate and flag the test pit sites. Steve said that he would also be on site at some time on Thursday morning.

December 16, 1993
8:30 a.m.

Tom Eldridge, ATL to Spencer Thew, ATL.
Spencer unavailable at this time. Spoke with Mike King. Tom told Mike that we completed the test pit excavation project on Thursday and that Tom had all the soil samples tagged and ready for delivery to Waltham, MA. The samples are to be delivered this morning. Mike told Tom that he would relay the message to Spencer.

SECTION 6

CHAIN OF CUSTODY LOG

**ENVIRONMENTAL LABORATORY
48 LAGRASSE STREET
WADDINGTON, NEW YORK 13694
315-388-4452, FAX 315-388-6510**

[illegible]

THINK QUALITY

SECTION 7

SAFETY REPORTS

WEEKLY SAFETY MEETING

Date held 12/16/93

Time 12:00 NOON

NEDSO

THRU: Area Engineer, _____ Area

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. PACW33-93-D-0004 Contractor ATLANTIC TESTING LABS

Conducted by T ELDRIIDGE Personnel present (Contr) ATL - T ELDRIIDGE
(Sub) COHEN CONSTR - SCOTT COHEN
(Govt) _____

Subjects discussed (Note, delete, or add):

✓ Individual Protective Equipment - HARD HATS AVAILABLE

Prevention of Falls -

✓ Safe Lifting Techniques - WATCH THE BACK, LIFT W LEGS

✓ Emergency Communications - USACE HOPKINTON DAM 746-4775

Fire Prevention -

Sanitation, First Aid -

Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms -

Hand Tools, Portable Power Tools, Woodworking Machinery -

Equipment Maintenance (Zero defects) -

Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring -

Lockouts for safe clearance procedures - electrical, pressure, moving parts

Welding -

✓ Excavations - CUT BACK SLOPES TO SAFE 1:1

✓ Loose Rock and Steep Slopes - CARE IN CLIMBING DIKE -
IF NEEDED BE

Explosives -

Water Safety -

Other -

Prepared by TOM ELDRIIDGE Title GEOTECHNICAL INSPECTOR

2. Forwarded.

Signature Tom Eldridge
Resident Engineer

CP: MANHOURS
Contractor 9 74
SubContractor 10 74
Period Covered 12/16/93

C-62

FIG No. 11

SECTION 8

FIELD INSPECTOR'S LOGS AND MAPS

A. DAILY LOG OF FIELD EXPLORATIONS

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY
WALTHAM, MASSACHUSETTS
FOUNDATIONS & MATERIALS BRANCH

LOG NO. 1

DATE DECEMBER 16, 1993

DAILY LOG OF FIELD EXPLORATIONS

PROJECT TEST PITS - DIKE H3 HOPKINTON, NH

TEMPORARY ADDRESS _____

LOCATION WHERE CAN BE REACHED 45 MONROE ST MANCHESTER, NH 03104

PHONE (603) 627-9143 TIME EVENING TEMPERATURE: _____ MAX. 40 MIN. 30

WEATHER CLEARING TO MOSTLY SUNNY - FALLING TEMPERATURES

DRILLING TODAY

HOLE	AREA	FOOTAGE		FOOTAGE TODAY	MATERIAL
		FROM	TO		

TEST PITS OR AUGER BORINGS TODAY

HOLE	AREA	DEPTH	MATERIAL
TP-1	UPSTREAM SIDE DIKE H3	6 FT.	IMPERMEABLE BLANKET FILL MATERIALS
TP-2	↓	↓	OVER VIRGIN, ORGANIC COVER AND F SAND, SILT SUBSOILS
TP-3	↓	↓	↓
TP-4	↓	↓	↓

HOLE	AREA	DEPTH	MATERIAL
TP-5	UPSTREAM SIDE DIKE H3	6 FT.	IMPERMEABLE SAND/GRNLS/SILT BLANKET FILL MATERIALS
TP-6	↓	↓	OVER VIRGIN, ORGANIC COVER AND F SAND, SILT SUBSOILS
TP-7	↓	↓	↓
TP-8	↓	↓	↓
TP-9	↓	↓	↓

PERSONNEL

NAME	HOURS
TOM ELDREDGE (GEO INSPECTOR)	9
SCOTT COEN (BACKHOE OPERATOR)	9

PLANT USED

ITEM	HOURS	BREAKDOWN HOURS
CASE 580E BACKHOE	9	

Tom Eldridge
CHIEF OF FIELD PARTY

FORM
DEC 63 198

REPLACES EDITION OF MAY 62 WHICH MAY BE USED UNTIL EXHAUSTED

(OVER)

NARRATIVE OF DAYS OPERATIONS

ALL 9 DESIGNATED TEST PITS, UPSTREAM OF DIKE H3 OF THE HOPKINTON AREA FLOOD CONTROL PROJECT WITHIN THE IMPERMEABLE BLANKET FILL MATERIAL BOUNDS, WERE EXCAVATED TO 6 FOOT DEPTH, PLUS OR MINUS - A CASE 580E BACKHOE WAS USED FOR THE EXCAVATIONS. SOIL STRATA CHANGES WERE NOTED, BLANKET THICKNESS, AND WATER TABLE DEPTHS AND SEEPAGES. REPRESENTATIVE SOIL SAMPLES OF EACH STRATA WERE OBTAINED FOR LABORATORY TESTING.

MAN-HOUR WORK BREAKDOWN

NAME	MOB.	DEMOS.	MOVING	DRILL OVB.	DRILL BEDROCK	PREV. MAINT.	EQUIP. FAILURE	LOST TIME (WEATHER)	INSP. & SUPER.	MISC.	TOTAL
TOM ELDRIDGE									9		9
SCOTT COEN										9	9

WORK FOR TOMORROW

TEST PIT EXCAVATIONS COMPLETED

FIELD PURCHASES

ITEM	AMOUNT

ITEM	AMOUNT

B. FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3 - HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-1 CO-ORD. N E GROUND ELEV.
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH 1' - 2'-0"	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
	S-1	1"		ORGANIC COVER BROWN, CMF SAND & GRAVEL, TRACE SILT (WE, NP)	BOULDERS (6 TO 12" DIA) FILL
2	S-2	1.0		GRAY, F SAND & SILT SOME GRAVEL, FEW COBBLES, TR-LITTLE CLAY (GLACIAL TILL) (MOIST, USG)	FEW COBBLES "IMPERVIOUS BLANKET
4	S-3	3.5		BROWN CMF SAND & GRAVEL, TR SILT (MOIST, NP)	SOME COBBLES FILL"
6				TEST PIT TERMINATED @ -6.0'	

DIMENSIONS OF TEST PIT 6' x 12' x 6' VOL. REPRESENTED 432 CU. FT.

COBBLES & BOULDERS: 4"-6" Diam. No. Vol. Cu. Ft.
6"-18" Diam. No. Vol. Cu. Ft.
Over 18" No. Vol. Cu. Ft.

NONE
OBSERVED

WATER TABLE
DEPTH

Remarks:

Submitted by TOM ELDRIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3 - HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-2 CO-ORD. N E GROUND ELEV.
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH 1' - 2' 0"	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
	S-1	1.0		ROCK FILL - BROKEN EDGE, BROWN cmf SAND & GRAVEL, Trace SILT (WET, NP)	SOME ORGANIC COVER < 1/2" GENERALLY COBBLES / Boulders 6-12" BOULDERS - MANY 1" LAYER GRAY SILT, THIN BEDDED (VARIED)
2	S-2			BROWN, cmf SAND, some GRAVEL, Trace SILT (moist, NP)	"IMPERMEABLE BLANKET FILL"
4					
6		6.0		GRAY mfs SAND, LITTLE GRAVEL, ORGANIC LAYERS - below 6 FT. DEPTH TEST PIT TERMINATED @ -6.5 ± FT.	

DIMENSIONS OF TEST PIT 6' x 12' x 6' VOL. REPRESENTED 432 CU. FT.

COBBLES & BOULDERS: 4"-6" Diam. No. Vol. Cu. Ft.
6"-18" Diam. No. Vol. Cu. Ft.
Over 18" No. Vol. Cu. Ft.

NONE
OBSERVED

WATER TABLE
DEPTH

Remarks:

Submitted by TOM ELDRIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3 - HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-3 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH 1' 2'-0'	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
2	S-1			ROCK FILL BROWN CMFSAND & GRAVEL, TRACE SILT	ROCK (BLASTED LEDGE) COVER, SOME ORGANICS (2) 3FT DIA BOULDERS
4				PACKED BOULDERS + COBBLES	WATER TABLE
6		6.0		SOIL SATURATED BELOW WATER TABLE	"IMPERMEABLE BLANKET FILL"
				TEST PIT TERMINATED @ -6.0'	

DIMENSIONS OF TEST PIT 6 x 14 x 6 VOL. REPRESENTED 504 CU. FT.

COBBLES & 4"-6" Diam. No. 100+ Vol. _____ Cu. Ft.
BOULDERS: 6"-18" Diam. No. 50 Vol. _____ Cu. Ft.
Over 18" No. 8 Vol. _____ Cu. Ft.

WATER TABLE
DEPTH -2.0'

Remarks: PACKED BOULDER + COBBLE FILL CONSISTING GENERALLY OF
BLASTED LEDGE MATERIAL Submitted by TOM ELDRIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3-HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-4 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH ft. 2-0	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
		1/2"		ORGANIC COVER	
2	S-1	1.5		GRAY MFSAND, 1:1:1 SILT, 1:1:1 GRAVEL (WET, USP)	
4	S-2			LIGHT BROWN-GRAY MFSAND, 1:1:1 GRAVEL, TRACE SILT (MOIST, NP)	
6	S-3	5.0		BROWN, ORGANICS + PEAT, 1:1:1 GRAY, F SAND + SILT FIBROUS (WET, NP) TEST PIT TERMINATED @ -6.0 FT.	Σ WATER TABLE (SLIGHT SEEPAGE OBSERVED) - SEE REMARKS

DIMENSIONS OF TEST PIT 6' x 12' x 6' VOL. REPRESENTED 432 CU. FT.

COBBLES & 4"-6" Diam. No. _____ Vol. _____ Cu. Ft.
BOULDERS: 6"-18" Diam. No. _____ Vol. _____ Cu. Ft.
Over 18" No. _____ Vol. _____ Cu. Ft.

WATER TABLE
DEPTH -6.0 FT.

Remarks: THE EXACT WATER TABLE ELEVATION IN THIS PIT WAS INDETERMINABLE DUE TO
THE IMPERMEABLE NATURE OF THE BLANKET MATERIAL Submitted by TOM ELORIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3 - HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-5 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION To DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH 1. 2-0	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
2	S-1	1"		1" ORGANIC COVER BROWN c/f SAND & GRAVEL, trace SILT (WET, NP)	FEW COBBLES + BOULDERS 2.5' - $\frac{7}{8}$ " WATER TABLE "IMPERVIOUS BLANKET FILL"
4		4.5'			
6				BROWN ORGANICS, PEAT; BROWN-LIGHT GRAY, f SAND & SILT TEST PIT TERMINATED @ -6.0 FT.	

DIMENSIONS OF TEST PIT 6' x 12' x 6' VOL. REPRESENTED 432 CU. FT.

COBBLES & BOULDERS: 4"-6" Diam. No. _____ Vol. _____ Cu. Ft.
6"-18" Diam. No. _____ Vol. _____ Cu. Ft.
Over 18" No. _____ Vol. _____ Cu. Ft.

WATER TABLE
DEPTH -2.5 FT.



Remarks: _____

Submitted by TOM ELDRIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DICE H3 - HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-6 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH ft. <u>2.0</u>	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
		1"		1" ORGANIC COVER	
2	S-1			GRAY-BROWN, CMT SAND SOME GRAVEL, LITTLE SILT, TRACE CLAY (MOIST, USP)	FEW COBBLES AND BOULDERS
4	S-2	3.0		BROWN, CMT SAND & GRAVEL, LITTLE SILT (MOIST, NP)	"IMPERVIOUS"  BLANKET FILL" 
6		4.5		PEAT AND ORGANICS BROWN SILT, LITTLE GRAY, FINE SAND & SILT (MOIST, NP) ROOTS, STUMP TEST PIT TERMINATED @ - 6.0 FT.	

DIMENSIONS OF TEST PIT 6 x 12 x 6 VOL. REPRESENTED 432 CU. FT.

COBBLES & BOULDERS: 4"-6" Diam. No. _____ Vol. _____ Cu. Ft.
6"-18" Diam. No. _____ Vol. _____ Cu. Ft.
Over 18" No. _____ Vol. _____ Cu. Ft.

NONE
OBSERVED WATER TABLE
DEPTH _____

Remarks: _____

Submitted by TOM ELORIOBE

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NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE Dike H3 - Hopkinton, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-7 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH 1" = 2'-0"	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
2	S-1	1"		1" ORGANIC COVER BROWN FINE SAND & GRAVEL, LITTLE SILT (WET, NP)	FEW BOULDERS & COBBLES (3"-12" D.A.) "IMPERMEABLE"
4	S-2	2.5		GRAY FINE SAND & SILT, SOME COBBLES (WET, USD) TRACE CLAY	BLANKET FILL"
6	S-3	5.0		BROWN PEAT + ORGANICS BROWN-GRAY SILT, LITTLE FINE SAND TEST PIT TERMINATED @ - 6.0 FT.	WATER TABLE BRANCHES DEBRIS

DIMENSIONS OF TEST PIT 6' x 12' x 6' VOL. REPRESENTED 432 CU. FT.

COBBLES & 4"-6" Diam. No. _____ Vol. _____ Cu. Ft.
BOULDERS: 6"-18" Diam. No. _____ Vol. _____ Cu. Ft.
Over 18" No. _____ Vol. _____ Cu. Ft.

WATER TABLE
DEPTH - 5.0'

Remarks: _____

Submitted by Tom ELDRIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3-HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/73
EXPLORATION NO. TD-9 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH 1'-2'-0'	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
	S-1	1/2"		1/2" ORGANIC COVER	"IMPERMEABLE BLANKET FILL" COLOR CHANGE FEW BOULDERS
2		2.0		GRAY-BROWN IMF SAND & GRAVEL, little SILT GRADE TO BROWN IMF SAND: GRAVEL, little SILT (MOIST, ND)	
4		4.0		BROWN ORGANICS & PEAT BROWN SILT, little FSAND (MOIST, VSP)	
6				TEST PIT TERMINATED @ 6.0'	STUMPS & BRANCHES

DIMENSIONS OF TEST PIT 6'x12'x6' VOL. REPRESENTED 432 CU. FT.

COBBLES & BOULDERS: 4"-6" Diam. No. _____ Vol. _____ Cu. Ft.
6"-18" Diam. No. _____ Vol. _____ Cu. Ft.
Over 18" No. _____ Vol. _____ Cu. Ft.

NONE OBSERVED WATER TABLE DEPTH _____

Remarks: _____

Submitted by TOM ELDRIDGE

CORPS OF ENGINEERS
NEW ENGLAND DIVISION
FOUNDATIONS & MATERIAL BRANCH

FIELD LOG OF FOUNDATION AND BORROW INVESTIGATION

SITE DIKE H3 - HOPKINTON, NH TYPE EXPLORATION TEST PITS DATE 12/16/93
EXPLORATION NO. TP-9 CO-ORD. N _____ E _____ GROUND ELEV. _____
PURPOSE OF EXPLORATION TO DETERMINE BLANKET THICKNESS AND COMPOSITION

DEPTH <u>1' - 2' - 0'</u>	SAMPLE'S		GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	REMARKS AND FIELD TEST DATA
	No.	Depth			
2	S-1	8"		1/2" ORGANIC COVER BROWN -	COLOR CHANGE SAME MATERIAL
4				GRAY-BROWN CME SAND & GRAVEL, LITTLE SILT (WET, NP)	"IMPERMEABLE BLANKET FILL" FEN BOULDERS AND COBBLES
6		5.0		BROWN ORGANICS & PEAT AND BROWN SILT, LITTLE FINE SAND (WET, NP) TEST PIT TERMINATED @ - 6.0 FT.	STUMPS & BRANCHES

DIMENSIONS OF TEST PIT 6' x 12' x 6' VOL. REPRESENTED 432 CU. FT.

COBBLES & BOULDERS: 4"-6" Diam. No. _____ Vol. _____ Cu. Ft.
6"-18" Diam. No. _____ Vol. _____ Cu. Ft.
Over 18" No. _____ Vol. _____ Cu. Ft.

NONE
OBSERVED

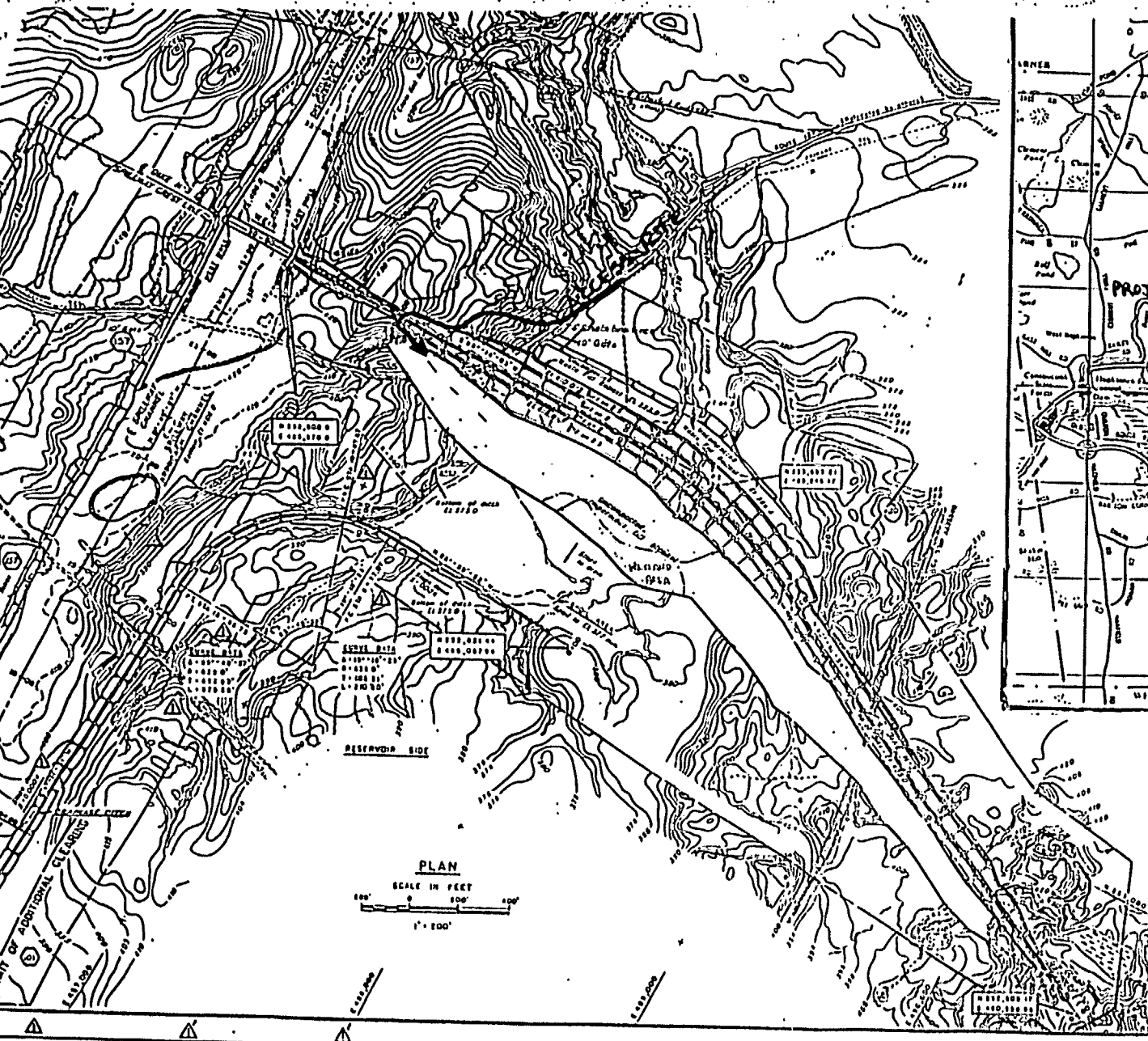
WATER TABLE
DEPTH _____

Remarks: _____

Submitted by TOM ELDRIDGE

C. FIGURE 1 - GENERAL PROJECT LOCATION MAP

D. FIGURE 2 - SITE LOCATION MAP

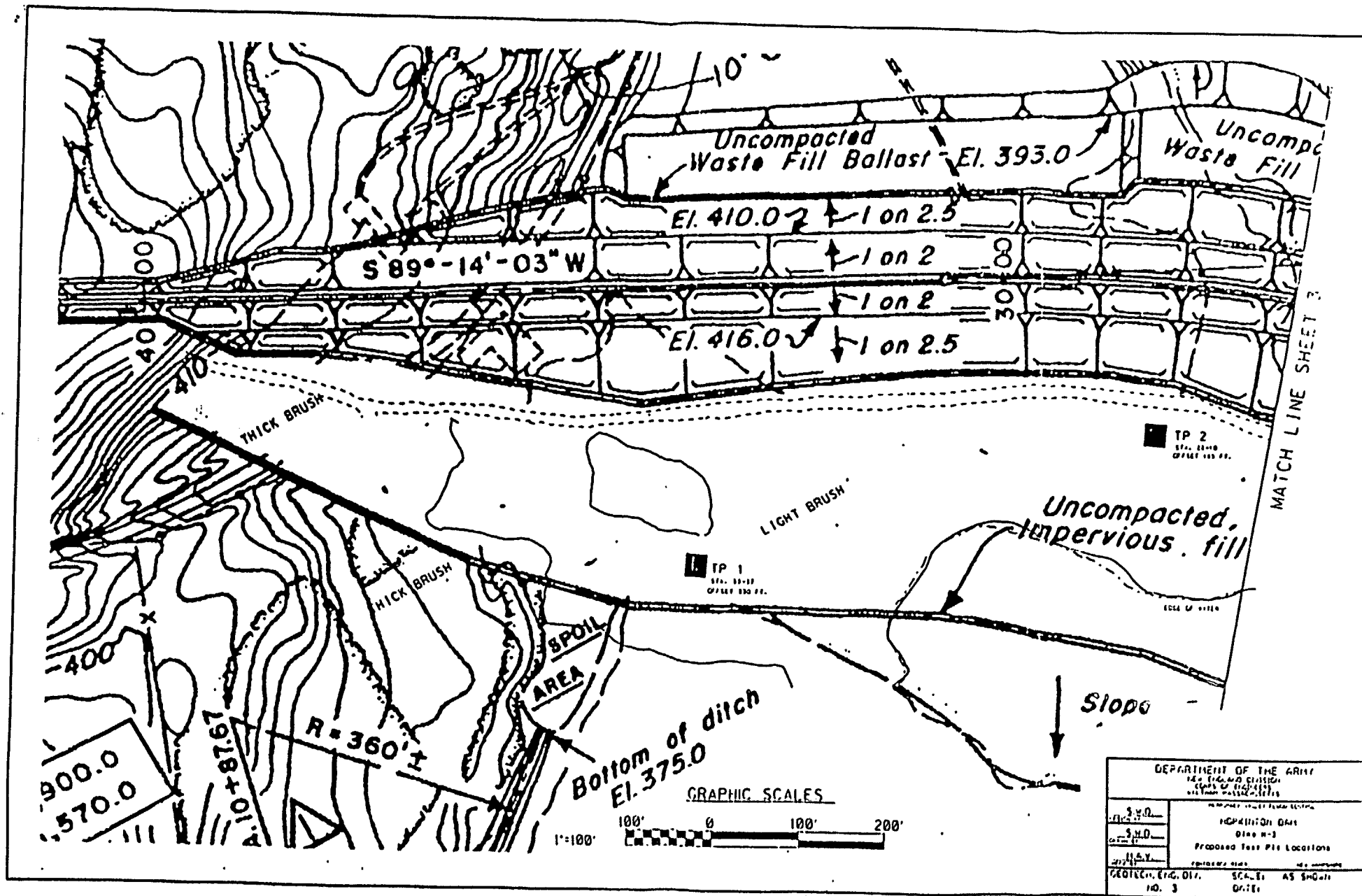


LOCATION MAP

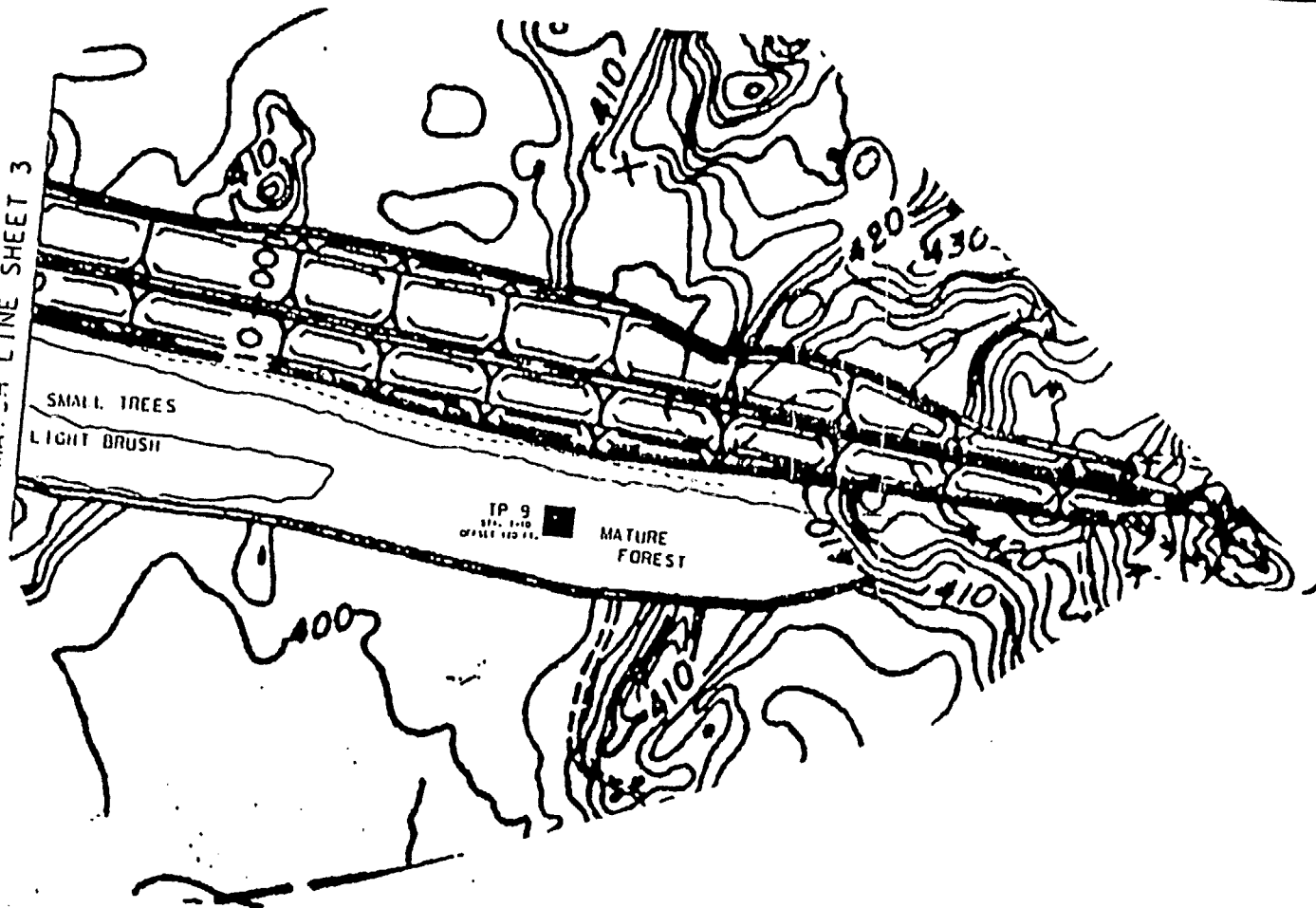
Final Field Survey Survey Control Points, Dam Ditch Stations and Curve Data revised 1952	
U.S. ARMY ENGINEER DIVISION, NEW ENGLAND CORPS OF ENGINEERS Boston, MA	
MERRIMACK RIVER FLOOD CONTROL HOPKINTON-EVERETT DAM SPILLWAY & DIKE H-3 GENERAL PLAN	
CONTOUR & PISCATAWAY RIVERS, NEW HAMPSHIRE DATE: JULY 1952	
DRAWN BY: [Signature] CHECKED BY: [Signature] SCALE: 1" = 1000'	
MER-1-1256	

APPENDIX 252

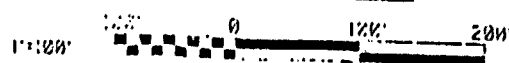
E. FIGURE 3 - TEST PIT LOCATION PLAN



MATCH LINE SHEET 3



GRAPHIC SCALES



DEPARTMENT OF THE ARMY	
NEW ENGLAND DIVISION	
ENGINEER REGIMENT	
HOPKINTON DAM	
Line No. 1	
Proposed Test Pit Locations	
S.M.D.	DATE: _____
S.M.D.	DATE: _____
M.A.Y.	DATE: _____
GEOTECH. ENG. DIV.	SCALE: AS SHOWN
NO. 5	DATE: _____

SECTION 9

OTHER RECORDS TAKEN